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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/449,034 11/24/99 BOK

L 4865/49-BFG1

000757 PM82/0614
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EXAMINER

BURCH, M

ART UNIT

PAPER NUMBER

3613
DATE MAILED:

06/14/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/449,034

Applicant(s)

BOK ET AL.

Examiner

Melody M. Burch

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 April 2001.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 4/12/01 is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- 15) ☐ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 18) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other: _____

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore the difference in thickness of the first, second, and third thickness disks claimed in, but not limited to, claim 6 lines 2-6 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-5 and 11-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Re: claims 1, 11, 13, and 16. It is unclear to the Examiner whether or not the first, second, and third thicknesses mentioned in lines 3-6 in claim 1, and in lines 4-7 in claims 11, 13, and 16, apply to the brake disks in general, the wear portions of the brake disks, or both the brake disks and the wear portions of the brake disks. Figure 1 shows structurally similar brake disks in general in terms of thickness. Therefore, it is unclear if the claimed different thicknesses relate to the wear portions that are embedded within the brake disk structure, for example. Applicant is advised to provide clarification regarding the thicknesses claimed. Also see the objection to drawings.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bok '895.

Re: claims 1,2, and 6-16. Bok discloses brake disk assembly shown in figure 4 comprising an end plate right-hand side 48, a pressure plate left-hand side 48, and brake disks 46,50 axially aligned therebetween, disks of three different wear portions- a first wear portion thickness of a first group of disks disclosed in col. 1 line 54, a second wear portion thickness of a second group of disks disclosed in col. 1 lines 55-56, and a third wear portion thickness of a third group of disks disclosed in col. 2 lines 19-20, and discloses the reduction of thicknesses of the available wear portions of the disks at an overhaul in col. 1 lines 60-65, the first thickness disks approximately equal to the initial available wear portion of the second thickness disks in col. 3 lines 47-61, and an actuator 52, but does not specifically disclose that disks of a second and third thickness have two thirds and one third, respectively, of the initial wear portion of the first thickness disk, and does not disclose all three thickness disks positioned in an envelope space and that a second thickness disk is about equal to the initial available wear portion of a third thickness disk at an overhaul, and does not disclose specific numbers

of rotors and stators. However, it is noted that Bok teaches in col. 5 lines 40-42 that the thickness of the wear portions may be varied to obtain certain advantages provided by the embodiments - one advantage being piston travel. It is maintained that one of ordinary skill in the art would optimize system performance by utilizing the appropriate thickness discs to achieve the desired performance results.

Also, in view of the teachings of the first thickness disks reducing to approximately equal to the initial available wear portion of the second thickness disks at an overhaul in col. 3 lines 47-61 and the teachings of third thickness disks in col. 2 lines 19-20, it would have been obvious to one of ordinary skill in the art to have constructed the brake assembly of Bok with third thickness disks that are simultaneously included in an envelope space in the assembly along with the first and second thickness disks in order to increase the number of disks present for a given brake application improving braking efficiency via increased frictional surface area, reduced piston travel, and a generally increased heat sink mass.

Additionally, in keeping with the trend, taught by Bok, of the available wear portions of a disk reducing to the lower initial wear portion levels of another disk at an overhaul, it would have been an obvious practice to continue the trend with a third thickness disk in order to maintain a pattern of staggered wearing throughout the brake assembly.

Re: claim 3-6, 11, 13, and 16. It would have been obvious to one of ordinary skill in the art to have constructed the brake assembly with a varying number of rotors and stators depending on the amount of braking force required which would be based on the

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type of aircraft in which the brake would be used. Also, it would have been obvious to one of ordinary skill in the art to have constructed the stators and rotors of appropriate sizes or thicknesses in order to achieve desired system performance results depending on the brake application.

Double Patenting

6. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claim 1 is provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of copending Application No. 09449033 in view of Bok '895. Both claims claim an end plate and a pressure plate in line 1 and brake disks axially aligned therebetween in line 2. The disks of a first thickness claimed in line 3 of the instant application correspond to the disk of a first group in line 3 of the '033 application. The disks of a second thickness claimed in line 4 of the instant application correspond to the disk of a second group in line 3 of the '033 application. The first thickness having an initial wear portion in lines 3-

4 of the instant application corresponds to the first group of disks having an initial wear portion in lines 5-6 of the '033 application. The disks of a second thickness having an initial wear portion that is a fraction of the first thickness disk in the instant application lines 4-5 correspond to the second group of disks having a wear portion of a second thickness which is a fraction of the first thickness in lines 7-9 of the '033 application. The available wear portions of the disks at overhaul reducing to lower wear portion levels in lines 7-12 of the instant application correspond to wear portion reductions to lower wear portion levels in lines 9-11 in application '033. Application '033, however, does not exactly claim that the second thickness is $\frac{2}{3}$ of the first thickness and that the third thickness is $\frac{1}{3}$ of the first thickness, nor does it claim that at overhaul the first thickness disks roughly equal the initial wear portion of the second thickness disks with the latter roughly equalling the initial wear portion of third thickness disks and the third thickness disks being fully worn. Bok teaches in col. 5 lines 40-42 that the thickness of the wear portions may be varied to obtain certain advantages provided by the embodiments on advantage being piston travel. It would have been obvious to one of ordinary skill in the art, in view of the teachings of Bok, to have constructed the brake assembly of Application '033 with the abovementioned dimensions in order to at least maintain a minimum piston travel or heat sink mass throughout the wear life of the brake assembly.

Also, in view of the teachings of the first thickness disks reducing to approximately equal to the initial available wear portion of the second thickness disks at an overhaul in col. 3 lines 47-61 and the teachings of third thickness disks in col. 2 lines

19-20, it would have been obvious to one of ordinary skill in the art to have constructed the brake assembly of Application '033 with third thickness disks that are simultaneously included in an envelop space in the assembly along with the first and second thickness disks in order to increase the number of disks present for a given brake application improving braking efficiency via increased frictional surface area, reduced piston travel, and a generally increased heat sink mass. Additionally, in keeping with the trend, taught by Bok, of the available wear portions of a disk reducing to the lower initial wear portion levels of another disk at an overhaul would have been an obvious trend to continue with the addition of a third thickness disk in order to maintain a pattern of staggered wearing throughout the brake assembly.

Claim 6 is provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 9 of copending Application No. 094449033 in view of Bok '895. It is noted that claim 6 provides the method steps of what claim 1 sets up structurally in the instant application as is the case between claims 1 and 9 of Application '033. See motivation in the preceding two paragraphs.

This is a provisional obviousness-type double patenting rejection.

Response to Arguments

7. Applicant's arguments filed 4/12/01 have been fully considered but they are not persuasive.

Re: Drawing Objection and 112 Rejection. Throughout the specification Applicant uses the phrase "available wear portion of a first, second, and third thickness".

Applicant also uses the phrase "mid-thickness disks" as disclosed, for example, on pg. 13. The seemingly interchangeable use of the above phrases causes confusion in the interpretation of the drawings, specifically in figure 2. It is unclear to the Examiner whether the THICK, MED, and THIN categories of the legend refer to the thickness of the actual disks or the thickness of a wear portion attached to disks of uniform thickness. Applicant's response states that "...Disks of a first thickness have an initial wear portion, disks of a second thickness have two thirds of the initial wear portion ...disks of a third thickness have one third of the initial wear portion...". Such response suggests that the brake stack assembly consists of different thickness disks which also have different wear portion thicknesses. Different thickness disks with different wear portion thicknesses is a limitation that is not clearly shown in the drawings or clearly disclosed in the specification.

Re: Claim Rejections. In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). Applicant has failed to provide evidence of the criticality of the exact thickness dimensions claimed. Accordingly, since Bok teaches that the thickness of the wear portions may be varied to obtain certain advantages, Examiner maintains that it would

have been obvious to one of ordinary skill in the art to have utilized discs with appropriate wear thicknesses which would achieve optimal performance. Examiner also notes that routine experimentation to optimize systems is an accepted basis of rejection.

Applicant argues that the base reference does not teach a brake assembly wherein the brake disks axially aligned and disposed between a pressure plate and an end plate are comprised of disks of three different wear portions. Bok does teach the use of an envelop between a pressure and an end plate initially including axially aligned and disposed first and second groups of disks of first and second wear portion thicknesses, respectively, and that the first group of disks is replaced after a predetermined number of brake applications with a third group of disks having an available wear portion of third thickness (col. 1 lines 66-68). Examiner notes that upon replacement of the first group of disks with the third group, the brake assembly had been comprised of disks of three different wear portions axially aligned and disposed between a pressure plate and an end plate. Nowhere in the claim recitation is it required for the brake disks of three different wear portions to *simultaneously* be axially aligned and disposed between the pressure and end plates.

Finally, applicant argues that the base reference does not teach that there is a 3-run brake stack. Examiner notes that Applicant's argument is more specific the claim language recited in any one of the claims in the application. Nevertheless, as stated by Applicant, Bok does teach that the first group of disks is replaced after a predetermined number of brake applications. As Applicant provides no details of the criticality of three

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runs over any other number of runs, it would have been obvious to one of ordinary skill in the art to have performed routine experimentation to determine the optimal predetermined number of brake applications before replacement occurs.

Re: Double Patenting Rejections. See the response set forth in the section regarding the claim rejections under paragraph 7.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melody M. Burch whose telephone number is 703-306-4618. The examiner can normally be reached on Monday-Friday (7:30 AM-4:00 PM).

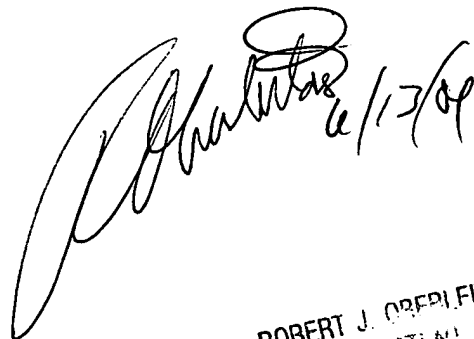
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert J. Oberleitner can be reached on 703-308-2569. The fax phone

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numbers for the organization where this application or proceeding is assigned are 703-305-7687 for regular communications and 703-305-7687 for After Final communications.

10. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1113.

mmb
June 12, 2001

A handwritten signature in black ink, appearing to read "R. O'Reilly", with a date "6/13/01" written next to it.

ROBERT J. O'REILLY
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3600